

Docket No. SA-537

Exhibit No. 6-AB

NATIONAL TRANSPORTATION SAFETY BOARD

Washington, D.C.

FAA Presentation I
Airplane Cabin Crashworthiness & Occupant Protection

(12 Pages)

Occupant Protection Requirements

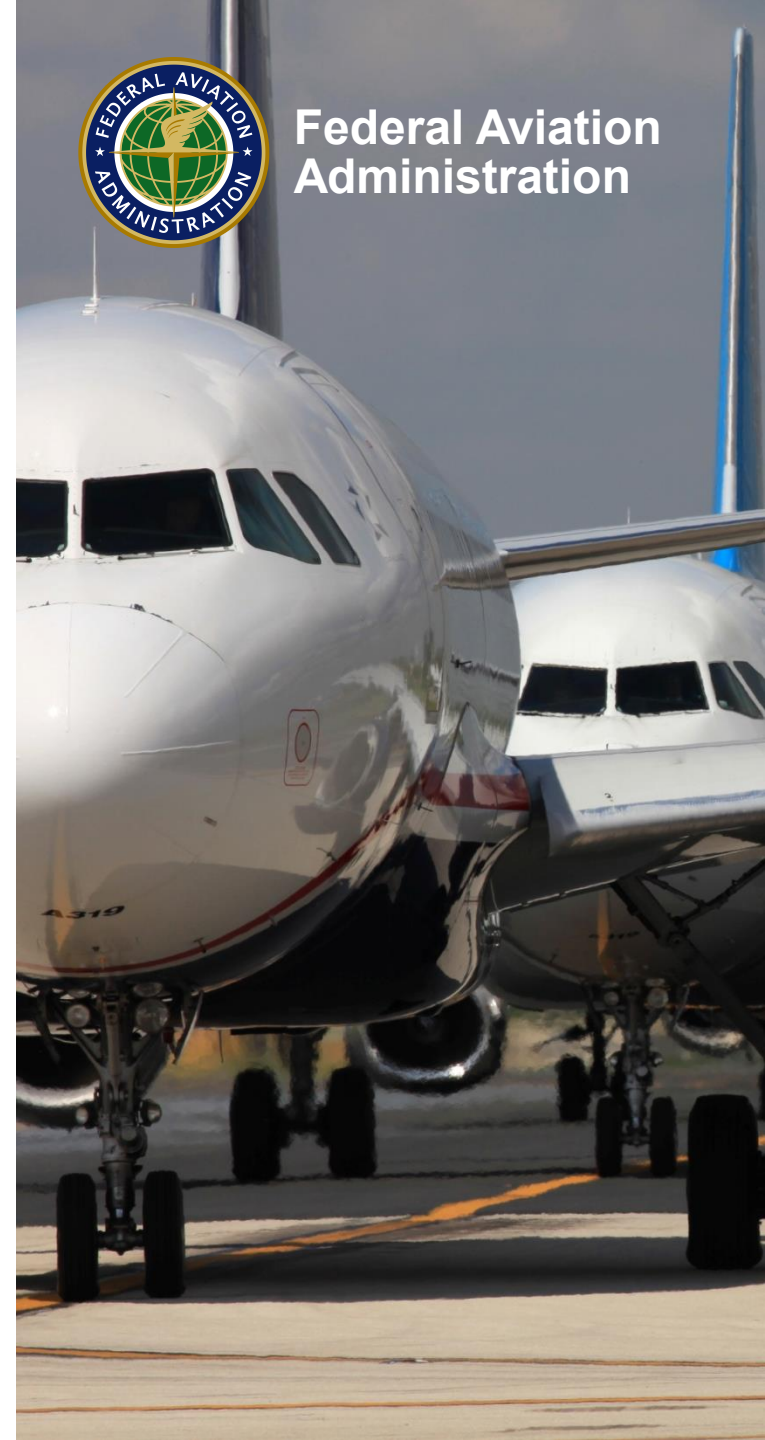
Presented to: NTSB

By: Jeff Gardlin, Transport Airplane Directorate

Date: December 11, 2013



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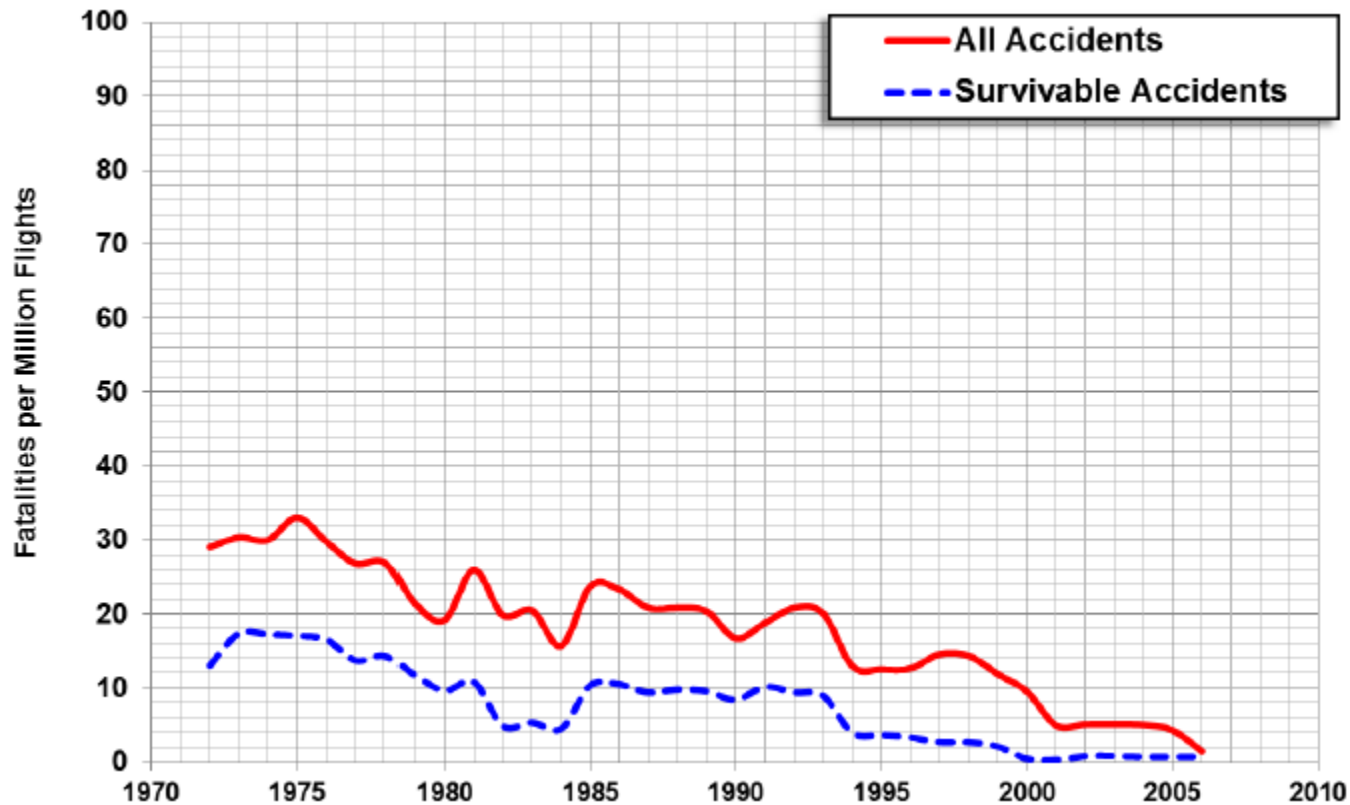
Accident Prevention vs. Mitigation

- **Primary safety objective – accident prevention**
- **Secondary – Hazard mitigation in an accident event**
- **Accident rate is extremely low**
- **Traffic growth means even a low rate will result in some accidents**



Trends

Transport Category and Select 'Large' Airplanes



US Fleet 9 year Moving Average (DOT/FAA/TC-13/46)

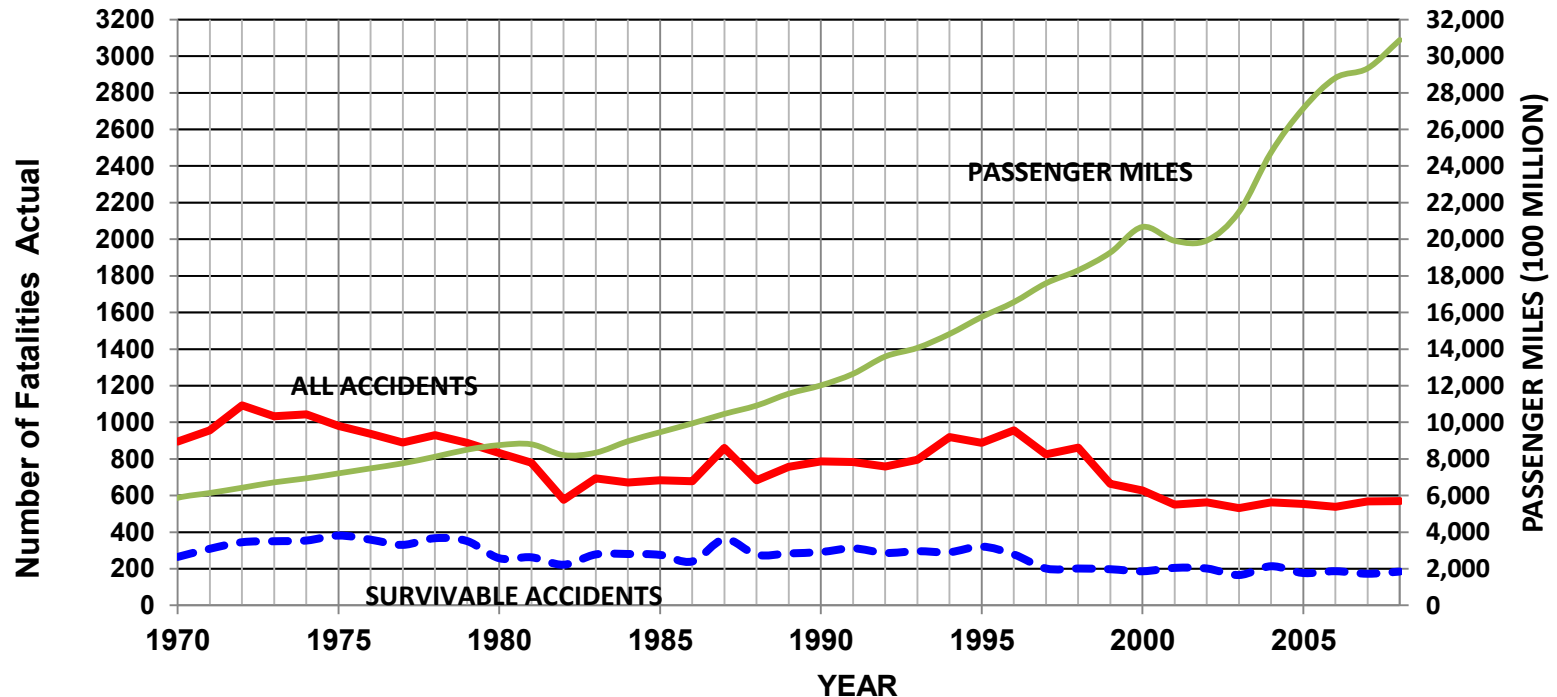


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Trends

Transport Category and Select 'Large' Airplanes

Fatalities - Western World Fleet (5 Year Centered Moving Average)

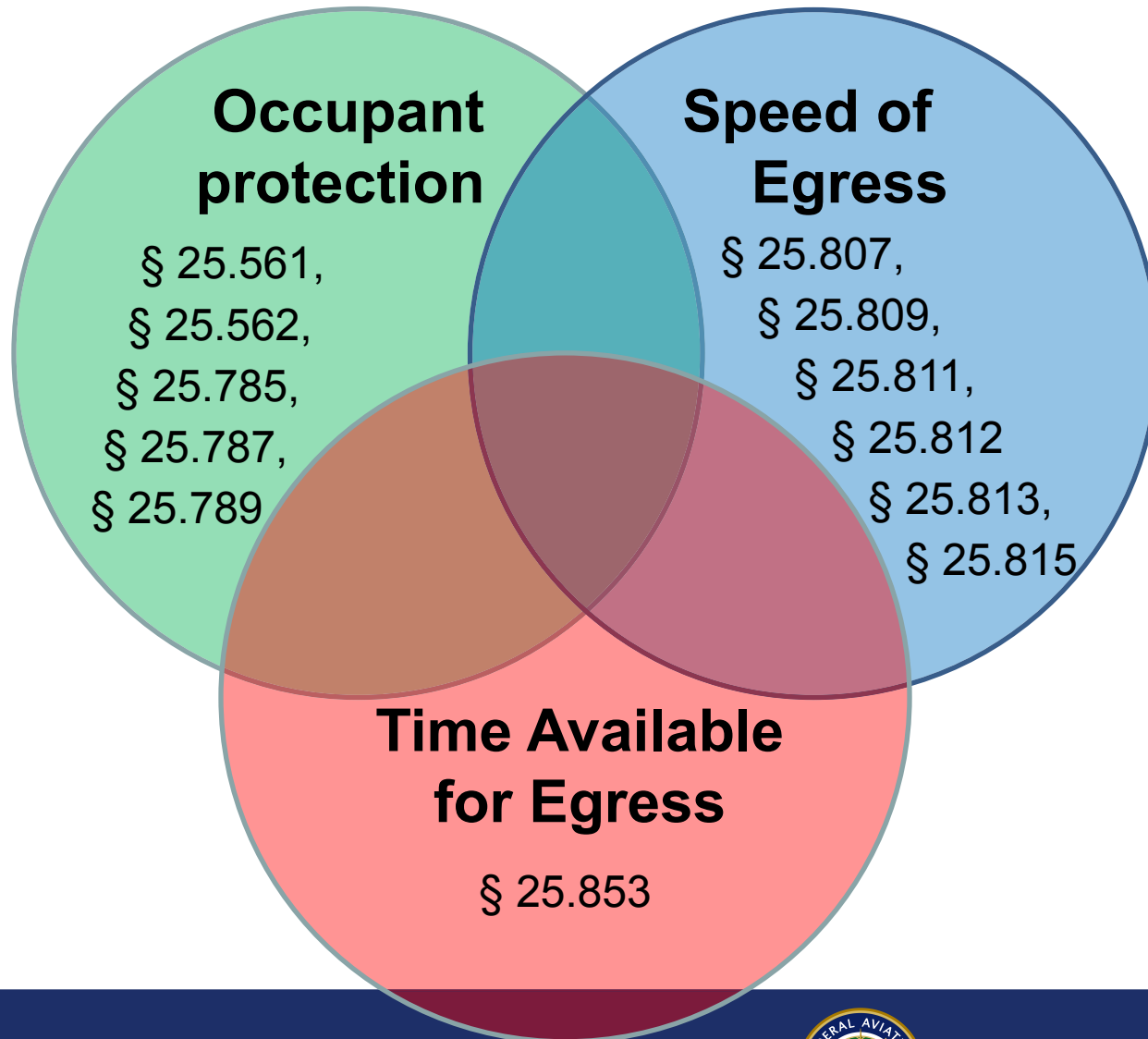


Worldwide Fatalities—All Accidents and Survivable Accidents
(DOT/FAA/AR-10/16--updated)

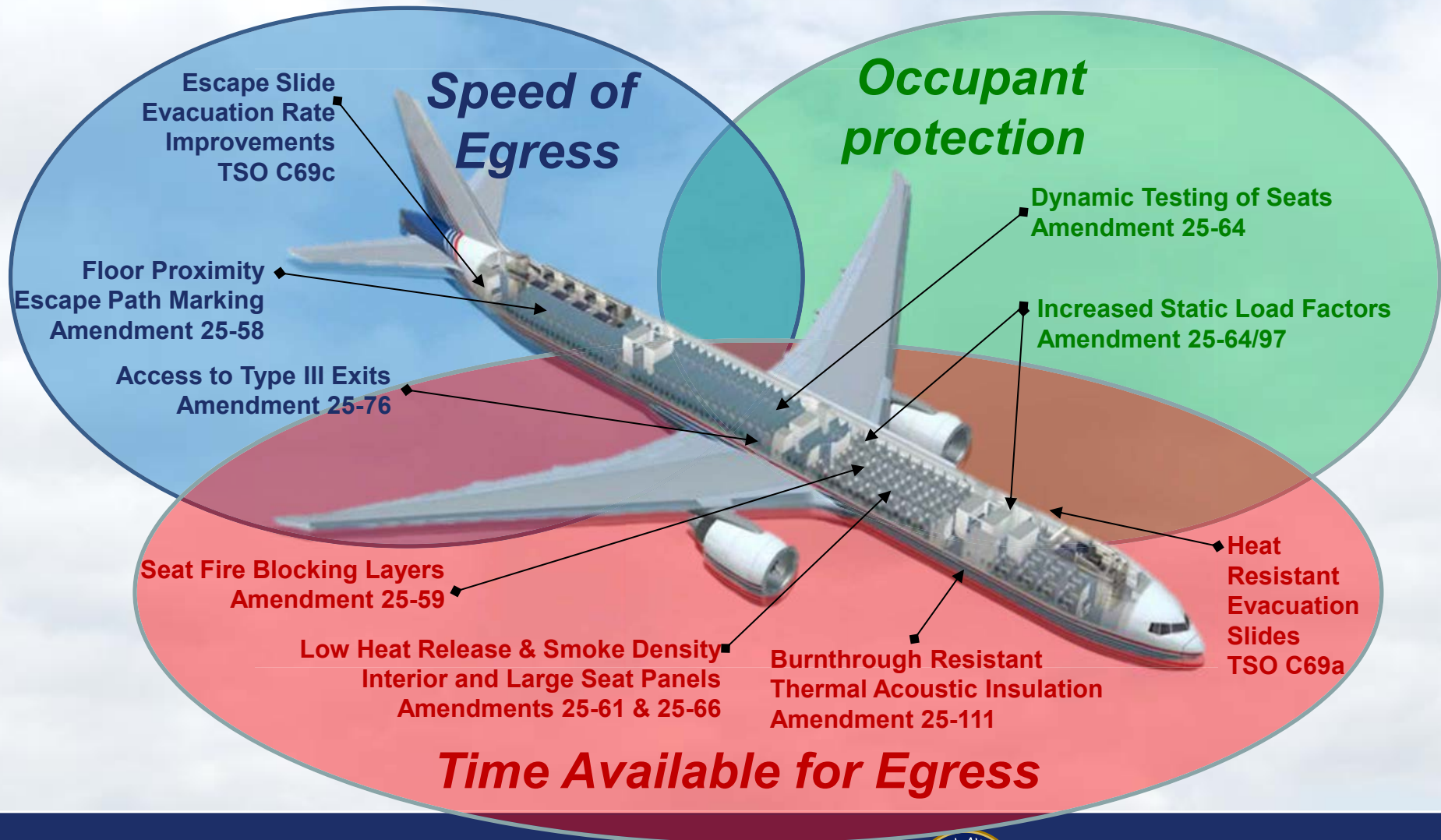


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Elements of Occupant Survivability



FAA Occupant Safety Advancements



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Major Occupant Safety Initiatives

- **Extend Egress Time:**

- Low Heat Release Interiors (1986 Amdt. 25-61)
- Fire resistant seat cushions (1984 Amdt. 25-59)
- Burnthrough resistant insulation (2003 Amdt. 25-111)
- Heat resistant escape slides (1983 TSO C69a)

- **Speed of Egress**

- Floor proximity lighting (1983 Amdt. 25-58)
- Access to type III exits (1992 Amdt. 25-76)
- Escape slide evacuation rate improvements (1999 TSO C69c)



Major Occupant Safety Initiatives

- **Occupant Protection**

- Dynamic testing of seats/Quantitative Occupant protection criteria (1988 Amdt. 25-64)
- Increased static load factors (1988/1997 Amdt. 25-64/97)

- **Other In-Flight Fire Safety Requirements:**

- Lavatory smoke detectors
- Cargo compartment fire suppression
- Thermal/acoustic insulation flammability resistance



Examples: 100% Survivability 2005-2013



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Summary

- **Accidents extremely infrequent, but will occur**
- **Accidents more survivable than ever**
- **Recent experience indicates that regulatory safety enhancements mitigate hazards and improve survivability**



Regulatory Reference Information

- **Floor Proximity Emergency Escape Path Marking:** October 1984, Amendments 25-58, 121-183
- **Improved Flammability of Seat Cushions:** October 1984, Amendments 25-59, 29-23, 121-184
- **Improved Interior Materials:** July 1986, Amendments 25-61, 121-189
- **“16G” Seats:** May 1988, Amendment 25-64; October 2005, Amendments 121-315
- **Improved Access to Type III Exits:** May 1992, Amendments 25-76, 121-228
- **Thermal/Acoustic Insulation:** July 2003, Amendments 25-110, 91-275, 121-289, 125-43, 135-85
- **Escape Slide Performance:** June 1983, Technical Standard Order C69a; August 1999, Technical Standard Order C69c



Accident References

- **Air France A340-300 in Toronto, Canada, 8/2/05; 297 passengers and 12 crew**
- **British Airways 777-200 in London, England, 1/17/08; 136 passengers and 16 crew**
- **Continental Airlines 737-500 in Denver, Colorado, 12/20/08; 110 passengers and 5 crew**
- **American Airlines 737-800 in Kingston Jamaica, 12/22/09; 148 passengers and 6 crew**
- **Merpati 737-300 in Manokwari-Rendani Airport Indonesia, 4/13/10: 103; passengers and 7 crew**
- **737-800 China Airlines in Okinawa 8/20/07: 157 passengers and 8 crew**
- **Lion Air 737-800, Bali Indonesia 4/13/13: 101 passengers and 8 crew**

